

# FINAL PROJECT REPORT

## " World Sustainability Analysis Through Data Visualization"

DATASET USED: <https://www.kaggle.com/datasets/truecue/worldsustainabilitydataset>

LAKSHMI NARAYANA MUTHE

### EXECUTIVE SUMMARY:

The UN General Assembly approved the Sustainable Development Goals (SDGs) in 2015 as a part of the 2030 Agenda for Sustainable Development with the goal of eradicating poverty, protecting the environment, and ensuring global peace and prosperity for all by that year. These goals are interconnected and address several issues that are important to sustainable development, such as gender equality, access to clean energy, clean water, and sanitation, climate change, and poverty. In order to end poverty, protect the environment, and guarantee that everyone can live in peace, health, and prosperity, the SDGs are meant to be a worldwide call to action.

The World Sustainability Dataset is thoroughly analyzed in this report, highlighting a number of global development-related factors such as population and GDP, income levels, urban and rural populations, trade, inflation, life expectancy, the prevalence of malnutrition, education, and CO2 emissions. In respect to the SDGs, the paper illustrates the positive relationship between population and GDP, with greater GDP levels often found in nations with larger populations. In high-income countries, urban populations tend to be higher than rural ones, and vice versa in low-income nations.

The analysis demonstrates that, while unemployment rates for both men and women have decreased over the past few years, there has been a notable fall in the percentage of children who are out of school and in poverty. Men and women still have different unemployment rates, and the rate of poverty elimination is slower than anticipated. On the other hand, enrolment rates in secondary schools have increased and now outpace those of primary school.

Southern Asia constantly tops all trade sectors when comparing trade across different geographical areas, followed by Europe and North America. Over the past 20 years, there has also been a dramatic decrease in the prevalence of malnourishment. There is still a difference in life expectancy, with low-income countries often having shorter life expectancies than high-income countries.

A definite inverse relationship between the production of renewable energy and CO2 emissions is shown by the report, with countries producing more renewable energy having lower CO2 emissions. Reducing CO2 emissions and reducing the effects of climate change can be achieved by increasing the generation and use of renewable energy sources including wind, solar, and hydroelectricity.

Overall, this report provides an informative analysis of the world's sustainability data set, illustrating various global trends and highlighting progress towards achieving the Sustainable Development Goals.

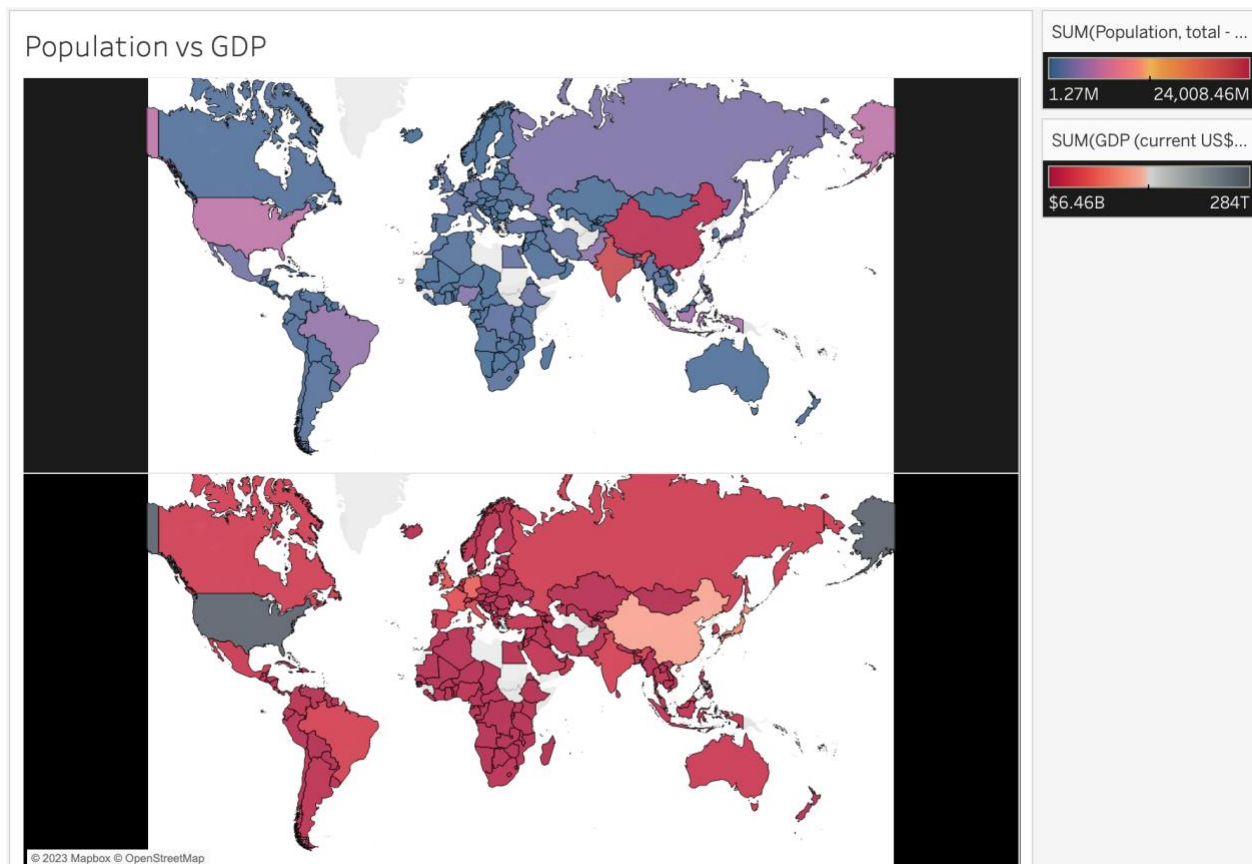
## RESEARCH ISSUE/QUESTION STATEMENT:

Q. “What are the key factors that contribute to achieving the Sustainable Development Goals, and how do these factors vary across different countries and income levels?”

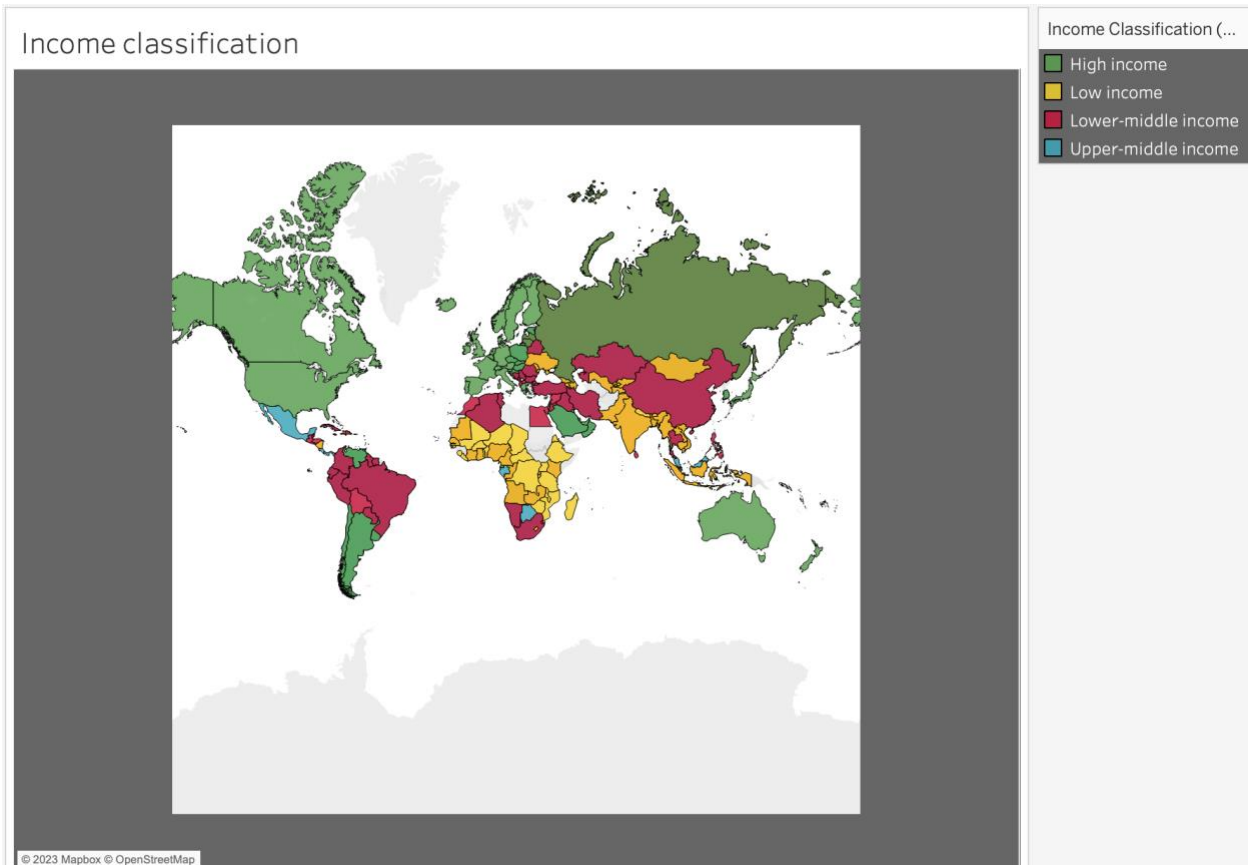
This research aims to explore the complex interactions and dynamics between the many elements that contribute to sustainability and how those elements are distributed and change over time and under different conditions. The question aims to uncover patterns, trends and disparities that can help guide sustainable development policies and actions, looking at a range of indicators relevant to the achievement of the Sustainable Development Goals, including social, economic, environmental and health dimensions. To understand the complex problems and opportunities of sustainable development, the question also emphasizes the importance of assessing long-term trends and patterns and differences between nations and regions.

## FINDINGS AFTER ANALYSING THROUGH DATA VISUALISATION/TABLEAU:

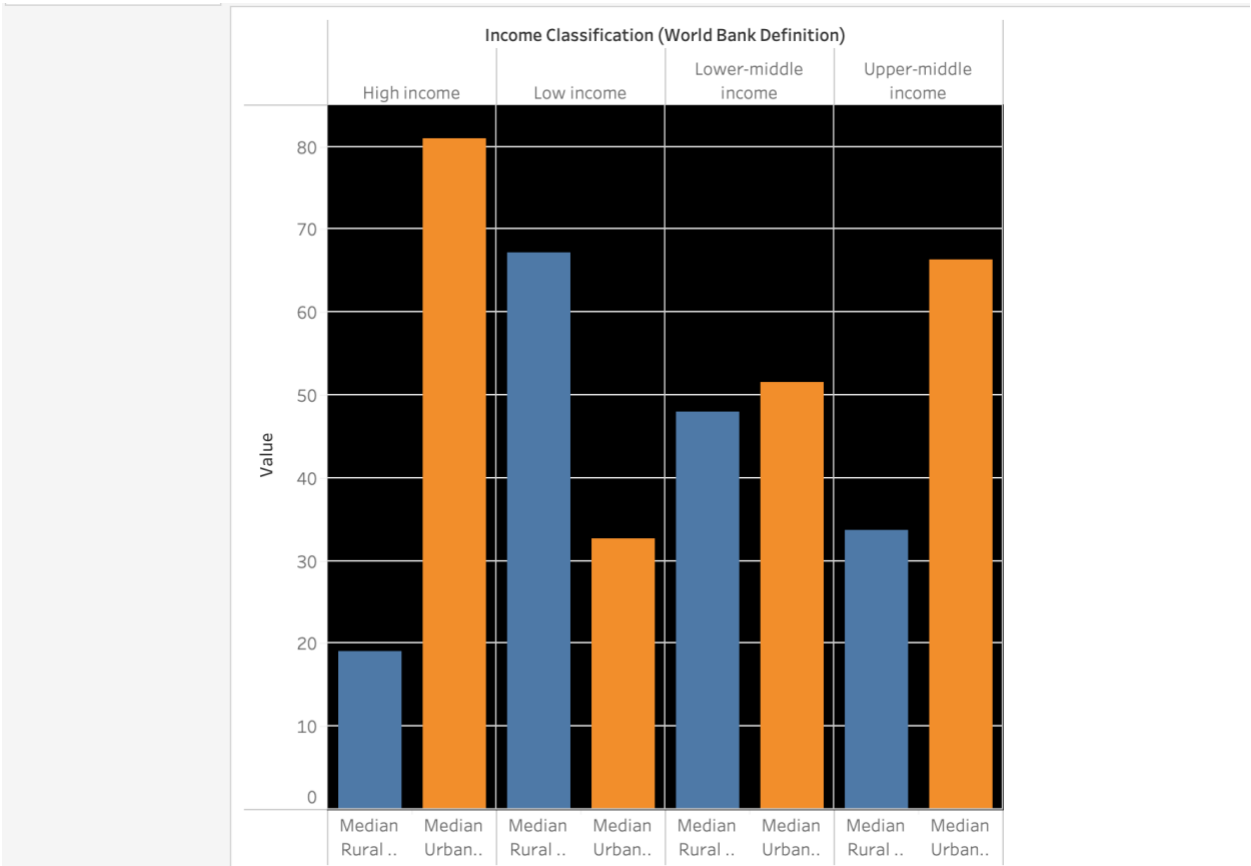
1. Population and GDP frequently show positive relationships in the context of the SDGs, with higher GDP levels being shown in nations with larger populations. This implies that population growth might promote growth and expansion of the economy. This result suggests that countries with larger populations would have an edge in terms of economic growth since they might benefit from economies of scale and perhaps have a larger consumer base.



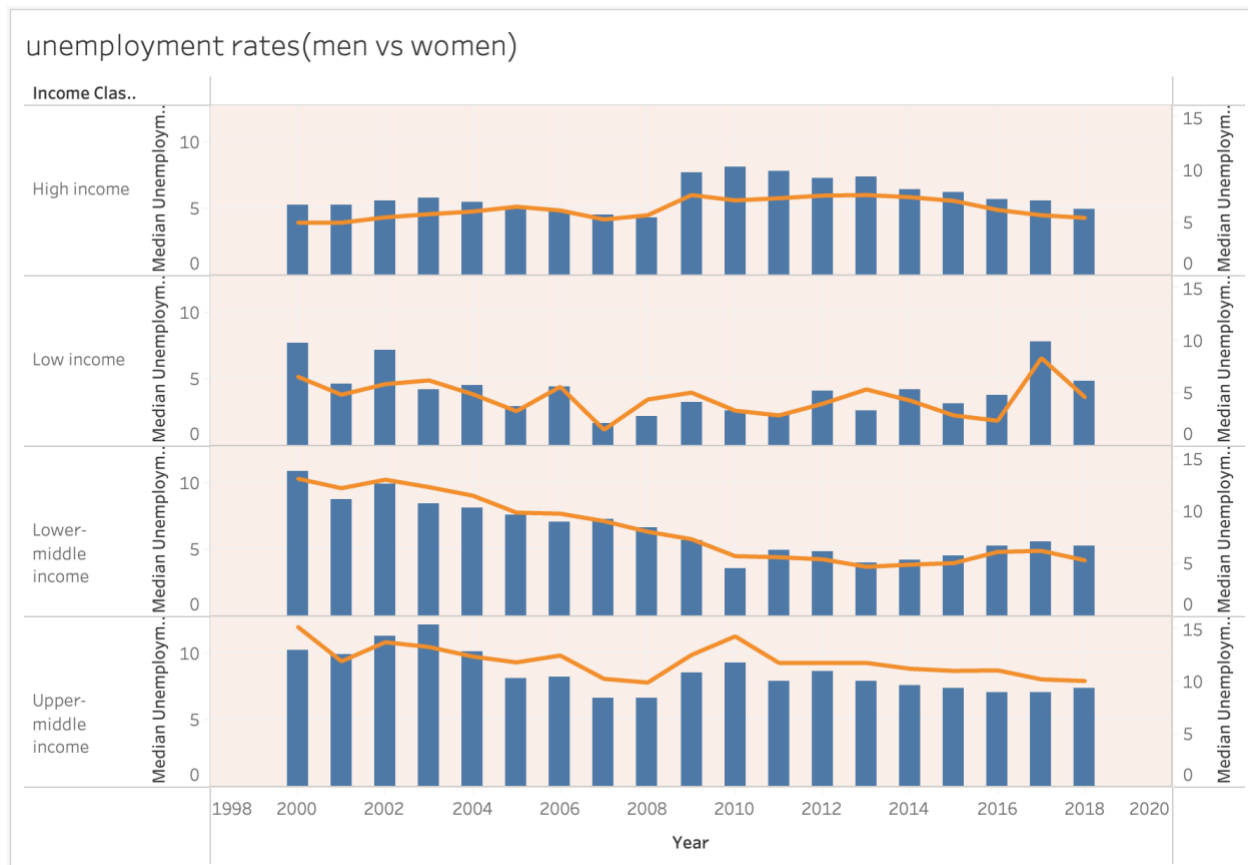
2. The map shows the locations of the various income-level countries. As we can see, many of the high-income countries are located in North America and Europe, while the sub-Saharan African nations have poor incomes. The world is home to a large number of middle-income nations. This finding indicates that there is a global income difference, with some parts of the world seeing greater prosperity and development than others.



3. When we look at the urban and rural populations around these income-producing countries, we can see that low-income countries have a large rural population whereas high-income countries have a large urban population. This finding suggests a link between urbanization and economic expansion. In more developed countries, people typically move from rural to urban areas in search of improved employment prospects, services, and infrastructure.



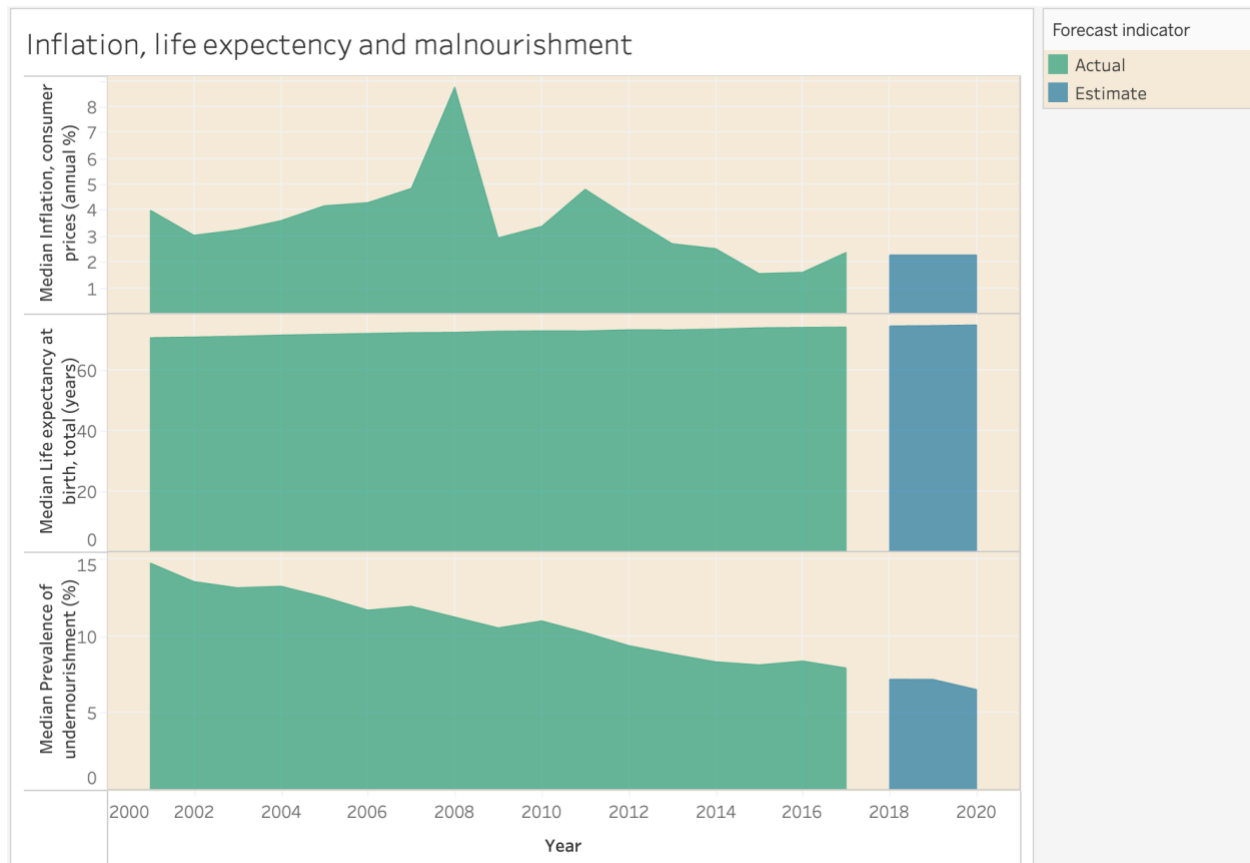
4. Despite the fact that overall unemployment has significantly decreased, men and women still have differing jobless rates. In upper middle-income nations, unemployment rates for men and women are greater. Even though there has been success in lowering unemployment rates generally, this study suggests that there is still work to be done to attain gender equality in employment opportunities. Additionally, the observation that the highest unemployment rates are seen in higher middle-income countries shows that not all people will always benefit from increased work chances from economic progress.



5. When we examine trade in terms of GDP, imports, and exports across various locations, we notice a pattern. In every trade sector, Southern Asia consistently maintains the top spot, followed by Europe and North America. This study found geographical differences in trade patterns, with certain parts of the world engaged in global trade to a larger degree than others. The fact that southern Asia consistently leads in all trade sectors further emphasizes the region's importance in global trade.



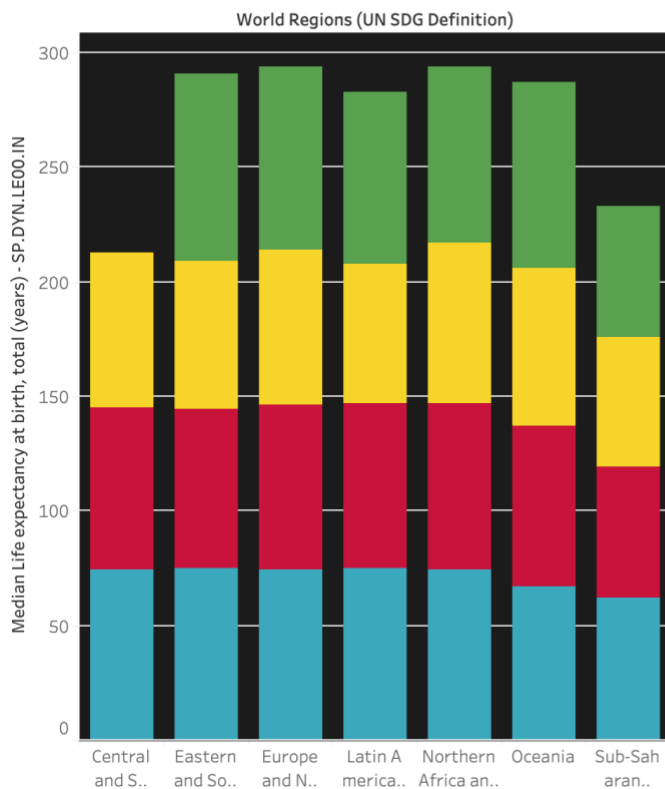
6. Looking at the rates of inflation, life expectancy, and the prevalence of malnutrition over the past nearly two decades, we can observe that (I) there are few inverted v curves in inflation, but trend seems to be constant in the coming years, (II) there is an increase in life expectancy of four years, and trend suggests that it will remain constant, and (III) the prevalence of malnutrition over the past two decades has decreased by half and is anticipated to decrease even further. These findings suggest that the 20 years prior saw gains in living standards and a decline in poverty. Even while there is still work to be done, the inflation and unemployment rates are still and undernourishment are falling while life expectancy is rising



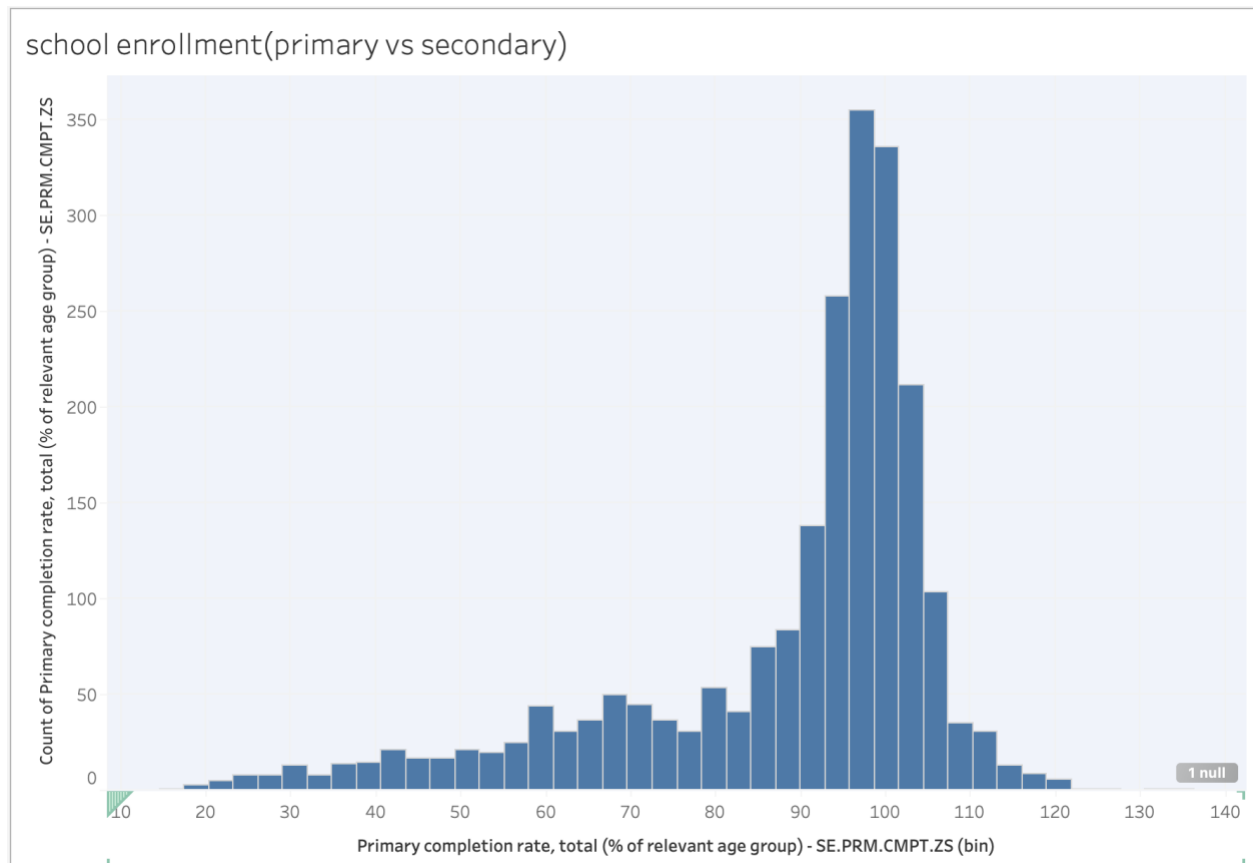


7. In particular, when we look at life expectancy, we see that low-income countries in different regions have low life expectancies, while sub-Saharan Africa has poor life expectancies across the board for nations of all economic levels, with the exception of North America and Europe, which have high life expectancies everywhere. According to this study, there are still significant health disparities around the world, with certain regions and countries having significantly lower life expectancies than others. Furthermore, the fact that life expectancies are high across the board in North America and Europe raises the likelihood that factors outside money may influence health outcomes.

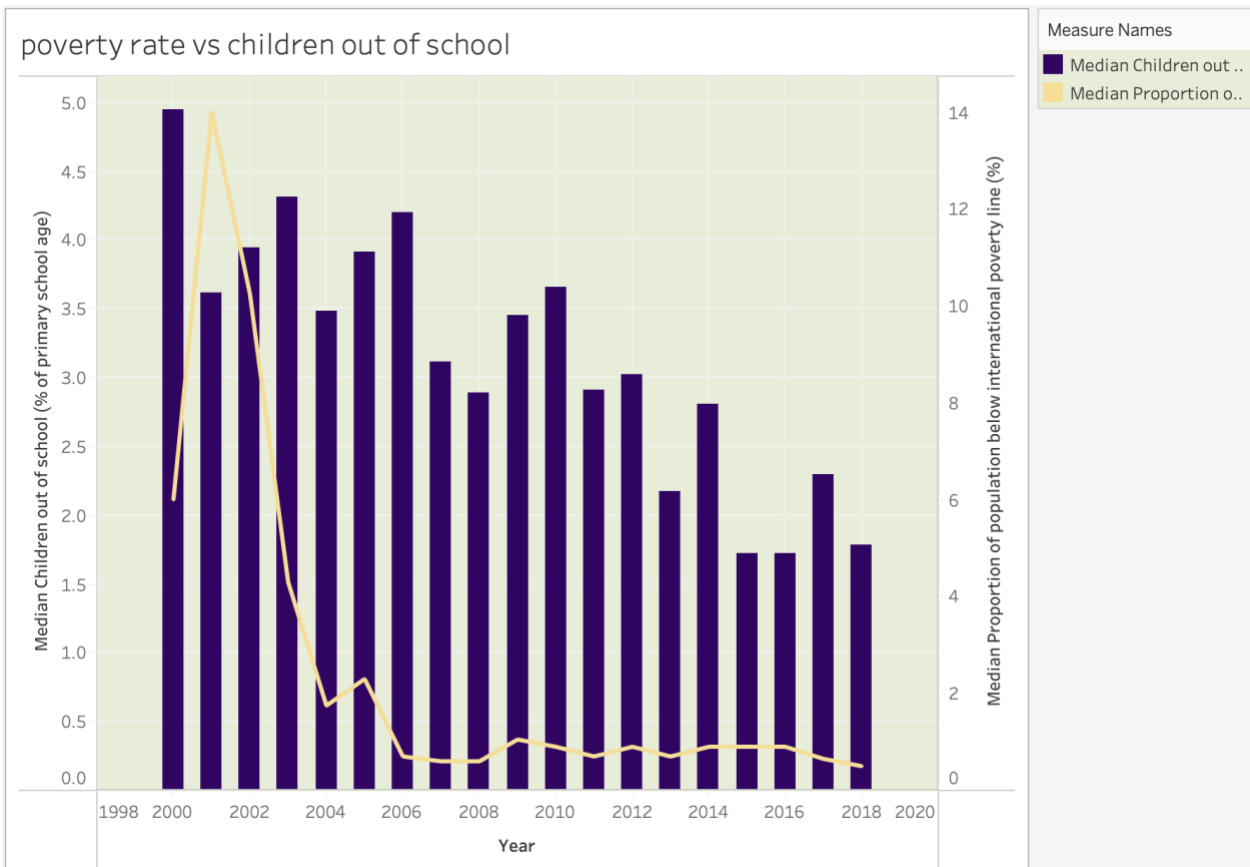
Life Expectancy



8. This finding indicates that over the past 20 years, primary school completion rates, which have been improving, have lagged behind secondary school enrollment rates. The rates of secondary school enrolment have, however, surpassed those of primary school graduation over the last two years, as can be seen. This may indicate increased efforts to boost enrolment and access to these higher levels of education as well as a growing appreciation for the importance of secondary education.



9. Both the poverty rate and the number of kids who aren't in school have significantly declined, though the decline in the poverty rate is happening more slowly than the trend would have predicted while the trend would have predicted a decline in the overall number of kids who aren't in school.



10. As seen in the map comparison, nations that produce more renewable energy also tend to have lower CO2 emissions. There is frequently an inverse relationship between the production of renewable energy and CO2 emissions. With the development of renewable energy sources, CO2 emissions normally decline. This is because whereas fossil fuel-based energy sources like wind, solar, and hydroelectric power release significant volumes of CO2 during operation, renewable energy sources like these emit little or no greenhouse gases. Consequently, reducing CO2 emissions can be achieved by increasing the production and usage of renewable energy.

